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Project for a Europe-Africa fixed link through the Strait of Gibraltar

Note by the Secretary-General

The Secretary-General has the honour to transmit to the Economic and Social Council the report prepared in accordance with Council resolution 2009/11 of 28 June 2009 by the Executive Secretaries of the Economic Commission for Europe and the Economic Commission for Africa on the activities carried out within the framework of the project for a Europe-Africa fixed link through the Strait of Gibraltar.

The Council has been interested in this project since 1982, following the decision taken by the Governments of Morocco and Spain within the framework of a bilateral agreement on cooperation adopted on 24 October 1980 for the joint study of the feasibility of the project. Since that time, the Council has regularly requested the two regional commissions to follow the development of the project studies and keep it informed in that regard.

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Report of the Executive Secretaries of the Economic Commission for Europe and the Economic Commission for Africa on activities carried out during the period 2013-2015 and programme proposed for the period 2015-2017 on the project for a Europe-Africa fixed link through the Strait of Gibraltar

Summary

The present report, prepared jointly by the Economic Commission for Europe and the Economic Commission for Africa pursuant to Council resolution 2013/7 of 19 July 2013, summarizes the work done under the authority of the Spanish-Moroccan Joint Committee by the two engineering firms, Sociedad Española de Estudios para la Comunicación Fija a través del Estrecho de Gibraltar and Société nationale d'études du détroit de Gibraltar, in connection with the fixed-link project.

The period 2013-2015 was devoted to the preparation of a new draft workplan. This involved:

- Revising the technical tunnel studies on the basis of site data gathered during the previous phase
- Updating data for traffic between the European Union and Maghreb countries, analysing tunnel traffic estimates and identifying the socioeconomic impact on the States of the region
- Presentation of the project to the meeting of the working group on infrastructure of the Euro-Mediterranean Transport Forum, held in Brussels on 6 June 2013; the Forum included it among its priority projects for the region
- Presentation of the project by the Moroccan and Spanish Ministers of Transport to the meeting of the Ministers of Transport of the Union for the Mediterranean, held in Brussels on 14 November 2014
- Inclusion of the project in the core multimodal transport network of the Western Mediterranean Transport Group (GTMO) at the meeting of the Group's Ministers of Transport, held in Lisbon on 22 October 2014.

Studies in 2015-2017 will consist of investigation and technical research aimed at clearly identifying a feasible solution that respects the time frame set out. Activities to promote and present the project to international and financial institutions are also planned.

I. Introduction

1. In its resolution 2013/7 of 19 July 2013, the Economic and Social Council requested the Executive Secretaries of the Economic Commission for Africa and the Economic Commission for Europe to continue to take an active part in the follow-up to the project studies on a Europe-Africa fixed link through the Strait of Gibraltar and to report back to the Council at its substantive session of 2015.

2. The purpose of the present report, which was prepared jointly with the two companies responsible for carrying out the project studies, is to respond to the provisions of the aforementioned resolution. The report includes, first, a summary of activities undertaken from 2013 to 2015 and, second, a summary description of the principal activities to be undertaken between 2015 and 2017 to advance the project.

3. It will be recalled that the goal of the project is the joint study by Morocco and Spain of a cross-Strait transport construction project, in order to strengthen Moroccan-Spanish cooperation, promote the establishment of an integrated Euro-Mediterranean economic area and develop a key transportation hub for an integrated Euro-African land network. The aim is to enhance the role of the Strait of Gibraltar as a vital trade corridor between Europe and Africa and meet potential traffic demand under satisfactory conditions of security, speed and respect for the environment. The studies for the project are taking place within the framework of the bilateral agreements signed by the Governments of Morocco and Spain, respectively, on 24 October 1980 and 27 September 1989, whereby the two parties agreed to study jointly the feasibility of the project for a fixed link through the Strait of Gibraltar on the basis of an equal sharing of costs, and under the authority of a permanent intergovernmental Joint Committee, with the help of two State engineering firms, namely Sociedad Española de Estudios para la Comunicación Fija a través del Estrecho de Gibraltar (SECEGSA), the head office of which is in Madrid, and Société nationale d'études du détroit de Gibraltar (SNED), whose head office is in Rabat.

4. After several stages beginning in 1980, the study process has been focused, since 1996, on the basic option, which consists of a rail tunnel bored beneath the sill of the strait and comprising two unidirectional rail tubes and a central service and safety tunnel. The functional design, which is similar to that of the Channel Tunnel, allows for the interconnection of the two countries' railway networks and the transfer of road vehicles on shuttle trains running between two terminal stations, one in Spain and the other in Morocco. The length of the structure as currently proposed would be 42 kilometres between terminals, 37.7 kilometres of which would be tunnel, including 27.7 kilometres of undersea tunnel. This basic option, identified in 1996, was subject to a preliminary pilot project, which was updated in 2007 in the light of newly acquired geological and geotechnical data, and was then evaluated within the framework of an overall evaluation of the project.

5. Owing to technical and economic considerations, and subject to the results of the studies on the development of relevant aspects of the basic option, the construction process would in principle consist of the excavation of a 17-kilometre undersea exploratory gallery starting on the Moroccan side. This is needed to establish the exact nature of the geology in the area, determine the best construction methods and refine the cost and timeline forecasts for tunnel construction. The boring will require the development of a detailed pilot project.

6. At the current stage of exploration, there are still uncertainties about both the geometry of the palaeochannels and the geomechanical properties of their formation. Considering the size and exceptional nature of the project, a programme of additional exploration and studies is needed.

II. General geostrategic context

7. Given its strategic geographical position, it is clear that much more is at stake than merely a cross-border transport construction project and that the full implications of the project will play out across several different levels.

8. In terms of its impact on Morocco and Spain, the fixed link will benefit plans for the development of their rail and highway transport networks. Linking these networks together would enable them to expand and diversify the services offered, ensure continuity of service and shorten the crossing time. The potential increase in transport demand could benefit the two instigating countries equally.

9. In terms of local impact, the project is part of a much broader regional development framework, involving the ports in particular. The ports of Tanger-Med and Algeciras are currently undergoing expansion and adding capacity, seeking a strategic position in the international transport network. The project will add value to and complement these port facilities and could provide a real boost to local development. Thus, it could also serve as a catalyst for growth in the Moroccan and Spanish economies if strategic support measures are put in place.

10. In terms of its impact at the transcontinental level and for the Mediterranean region, the project will provide a strong and continuous link between European transport networks and those of Mediterranean countries and could serve as a catalyst for infrastructure planning, given its potential impact on development in the Mediterranean region. It will provide the crucial missing link in the Euro-Mediterranean transport system. In this transcontinental context, the project is part of the overall strategy for transport development in the western Mediterranean adopted in the context of numerous projects carried out by Euro-Mediterranean bodies in the region.

11. This outlook is in line with the overall Euro-Mediterranean transport development strategy under various cooperation programmes, in particular the Regional Transport Action Plan for the Mediterranean Region 2014-2020, adopted in Brussels in March 2015 by the Euro-Mediterranean Transport Forum; the Union for the Mediterranean programme; and the cooperation framework led by GTMO, which have emphasized the importance of establishing a Euro-Mediterranean integrated multimodal transport network in order to strengthen trade between the European Union and its Mediterranean partners.

12. In conclusion, the project's geostrategic component and the potential of long-distance rail systems for the development of mass transport networks weigh heavily in favour of its implementation and the involvement of the international community.

III. Activities carried out during the period 2013-2015

13. Since the Council's previous meeting on the project, in 2013, project activities have focused primarily on an in-depth review of the studies and activities undertaken in the earlier stages, the main findings of which have informed the current report, as well as on careful preparation of the workplan for the next phase of the project studies.

14. In terms of the project's organization and management, the Governments of the Kingdom of Spain and the Kingdom of Morocco have appointed the members of the intergovernmental Joint Committee, which oversees the project, and the respective co-Chairs in the Spanish Ministry of Development and the Moroccan Ministry of Transport, Equipment and Logistics. This has enabled enhanced cooperation between the two engineering firms in assessing the status of the project and preparing a new workplan.

15. It is worth recalling that the project, at its current stage, consists of the option of boring a rail tunnel under the seabed. That solution is the most viable in terms of construction, given that tunnel-boring is a technically tried and tested approach. However, the geological complexity of the site and the geotechnical characteristics of the materials identified along the only viable route through the Strait means that the chosen solution requires additional geotechnical investigation. The choice of route depends on the topography of the terrain, which is one of the distinctive features of the physical geography of the Strait. The point at which the two continents are the closest is approximately 14 kilometres wide, but that route has been found to be the deepest in the Strait, reaching 900 metres at some places. The best route in terms of distance and depth stretches between Punta Paloma on the Spanish coast and Ras Malabata on the Moroccan coast. It covers a distance of 28 kilometres and reaches a maximum depth of 300 metres. The construction process envisages the prior excavation of an exploratory gallery, which will be essential in order to accurately identify the geological characteristics of the area, optimize construction methods and refine the cost and timeline forecasts for tunnel construction.

16. The main technical activities recently carried out have related to:

16.1 The physical environment, through:

- Geodetic measurements on the two shores of the Strait and monitoring of information from the permanent Global Positioning System (GPS) stations in the area
- Updating of geological maps and data for the north and south shores
- Research and maintenance of experimental work at Tarifa
- Monitoring of geotechnical information on flysch and breccia
- Measurement and prediction of sea currents in the Strait, and
- Seismic and seismotectonic research and studies

16.2 Engineering, through:

- Assessment of the preliminary pilot project for the basic option and the environmental impact study

- Development and expansion of the operation and capacity study
- Further analysis of the geomechanical properties of the breccia, and
- Follow-up regarding the development of tunnel boring machines

16.3 The socioeconomic environment, through:

- Evaluation and review of some aspects of demand that are part of the traffic forecasting model
- Monitoring of legal issues
- Analysis of the socioeconomic impact of the project on the regions concerned
- The traffic and socioeconomic data observatory, whose statistical reports are of particular note
- The collection of data on traffic in the Strait of Gibraltar since 1982, which has enabled time series spanning more than 20 years to be established.

17. However, the project is more than just a technical challenge or a piece of infrastructure linking two continents. It also entails the provision of services to a large, transnational body of users. Determining the exact benefits and impacts of the project is therefore essential. The analysis of mega-projects or cross-border structures provides illuminating examples of the benefits of projects of similar proportions.

IV. Involvement of institutional actors

18. Against a backdrop of growth in trade in goods and services and increased international mobility, the project will affect a huge intercontinental area of Europe and Africa beyond the immediate vicinity of the facilities. It will serve as a strategic hub in a process of regional economic integration that will contribute to sustainable development and stability in the region.

19. The complexity of the project and its economic and financial impact transcend the bilateral framework of the two instigating countries. Various institutional actors have already become involved in promoting the project, pursuant to the provisions of relevant Council resolutions. This initiative should be pursued and extended to all potential partners who could become involved in, or alongside, the various phases of the project.

20. The process of consulting with and involving international actors in decision-making should also include efforts to involve those actors in providing support, especially financial support, for the project. The geostrategic importance of the project, its economic repercussions for the region, its impact at the international level and its importance for the development of underground transport infrastructure technologies fully justify such involvement, but the natural corollary to an oversight role for partners is the duty to provide support.

21. This broad international backdrop underscores the Euro-Mediterranean nature of the project and the geographical extent of its potential socioeconomic impact. It therefore justifies the participation of the European Commission and other regional institutions in the project's development.

21.1 The European Union, to which the project has been referred, will be one of the leading partners. That makes the Euro-Mediterranean Transport Forum, as a nucleus for Euro-Mediterranean collaboration,[1] a particularly interesting institutional framework for the project, because it is there that the trans-Mediterranean transport network will be defined. The Regional Transport Action Plan for the Mediterranean Region (2014-2020) was adopted at the meeting of the Forum held in Brussels on 25 March 2015. An initial timeline was established for the identification of priority projects to be selected on the basis of regional value added. The Forum will also propose the indicative map of the trans-Mediterranean transport network to be adopted at the Conference of Ministers of Transport of the Union for the Mediterranean. That map will be proposed for inclusion in regulation (EU) No. 1315/2013 on European Union guidelines for the development of the trans-European transport network as an indicative extension of that network to the European Union's Mediterranean partners. Inclusion of the map of the trans-Mediterranean transport network will formalize, for the European Union, the vision of a connection between the two networks and will also confirm the consistency of the approach to developing transport connections not only within the European Union but also jointly with its neighbours. It is interesting to note that the GTMO core multimodal transport network will be considered an integral part of the indicative trans-Mediterranean transport network and that the project is included within that multimodal network.

21.2 The second Conference of Ministers of Transport of the Mediterranean, organized by the Union for the Mediterranean in the framework of Euro-Mediterranean transport cooperation, and held in Brussels on 14 November 2014, emphasized both the need for a Euro-Mediterranean integrated multimodal transport network, which would have a key role to play in enhancing trade between the European Union and its Mediterranean partners and the need to strengthen connections between the trans-Mediterranean transport network and the trans-European transport network by means of activities related to motorways of the sea, logistics, airports and land links. At the Conference of Ministers held in Brussels, the Minister of Transport, Equipment and Logistics of the Kingdom of Morocco and the Minister of Development of the Kingdom of Spain underscored the fact that the project came fully within the objectives approved by that Conference, aimed at connecting the Mediterranean transport network to the trans-European transport network in order to ensure interoperability and thereby promote regional cooperation in the transport sector throughout the Mediterranean.

21.3 The Western Mediterranean Transport Group (GTMO),[2] which is mandated to advance regional transport cooperation in the Western Mediterranean region, is an appropriate framework for assessing the interest of the countries closest to the

[1] The Euro-Mediterranean Transport Forum brings together the European Commission Directorates General for Mobility and Transport (DG MOVE) and for Neighbourhood and Enlargement Negotiations (DG NEAR); the Union for the Mediterranean; representatives of the Ministries of Transport of the Mediterranean partners and the States members of the European Union; and associated institutions, such as the Western Mediterranean Transport Group (GTMO)/Centre for Transportation Studies for the Western Mediterranean, the Arab Maghreb Union, the Economic and Social Commission for Western Asia and international financial institutions (European Investment Bank, World Bank, European Bank for Reconstruction and Development, etc.).

[2] The Western Mediterranean Transport Group comprises the Ministers of Transport of Algeria, France, Italy, Libya, Malta, Morocco, Mauritania, Portugal, Spain and Tunisia.

project. Its Group of Experts, coordinated by the GTMO technical secretariat at the Centre for Transportation Studies for the Western Mediterranean, follows up initiatives adopted by the Ministers of Transport and also proposes cooperation priorities. Representatives of the two engineering firms joined the Group at its eighteenth meeting, held in Barcelona, Spain, on 4 July 2013. Together with representatives of both the Moroccan and Spanish Ministries of Transport, the presidents of the two firms participated in the meetings held in 2014 and 2015, allowing for the inclusion of the project in the core multimodal network adopted at the eighth Conference of the Western Mediterranean Transport Group, held in Lisbon on 22 October 2014. Furthermore, the outcome declaration from that Conference mentioned the project for the first time, mandating the Group of Experts and the GTMO technical secretariat to conduct semi-annual follow-up of the work done by Morocco and Spain in relation to the project.

22. In conclusion, the project will contribute to the establishment of a Euro-Mediterranean integrated multimodal transport network and will stimulate movement of people and goods, trade relations and business cooperation among all Mediterranean partners and with the European Union, by enabling a strategic land-based connection between the future trans-Mediterranean transport network and the trans-European transport network. Despite the long-term nature of the project, its existence could serve as a catalyst and promote development throughout the Mediterranean region.

V. Future work

23. The two engineering firms have drafted a workplan which, after adoption by the Joint Committee, will define the work to be performed by the two companies over a period of, in principle, three years, in order to continue defining the project, based on the results of the previous study phases and existing data and analysis. The study process is intended as, and indeed must be, a process for reviewing and updating the results obtained.

24. The project's development stage must be addressed from two main analytical directions, covering both the technical challenge of a fixed link through the Strait of Gibraltar and the challenges of ensuring optimal interoperability of the transport networks on either side of the Strait. The workplan proposes to separate these two aspects, though obviously with the long-term aim of reaching a unified definition of the project in its different dimensions.

25. The workplan proposes first to conclude a simplified study — in other words, a study focusing on key activities only — of the feasibility of a rail tunnel under the Strait. The workplan thus provides for an updated presentation at the preliminary pilot project level of the tunnel project as a whole, both in technical terms and in terms of forecasts and distribution of traffic flows, taking into account, as far as possible, all the comments made in the overall evaluation of the project and additional available information. An exploratory gallery must be dug to enable testing of excavation conditions in the flysch and breccia. A study would therefore be useful to update and further define the characteristics of the gallery, and to identify the goals and means of its construction, including financial aspects. Part of the workplan thus provides for a study of the exploratory gallery, once excavated;

this study is to be carried out in greater detail than would be the case during a pilot project.

26. Follow-up work by the two engineering firms is envisaged, covering drilling techniques and undersea surveys, including offshore geotechnical tests. An updated study of directional drilling techniques is also planned and, consequently, the future execution of an undersea long horizontal drilling operation. The workplan also includes a continuation of the exploration phase in respect of site data and the physical environment, as well as cooperation among the scientific institutions of the two countries and potential partners.

27. The most important requirements for the project include prospecting and study of the future performance framework. Through research it will be possible to assess many aspects of the project's feasibility, especially the socioeconomic justification, financial equilibrium and political and social integration. That analysis will require operations to systematically observe the Strait and its surrounding areas, as well as traffic forecasting and prospecting operations. The study of the future framework under consideration may take a more proactive turn if it also aims to identify and design the support and improvement measures that could make a decisive contribution to the integration of the project, both at the level of transport networks and in the territory and the surrounding economic environment in general. Therefore, part of the workplan is given over to a series of studies regarding integrated improvement and development of the Strait region, in order to foster the conditions essential for establishing the project in the region. If the areas on each shore of the Strait were to become centres of economic competitiveness, the project's feasibility would be greatly enhanced. Within this framework, consideration must be given to improving the transport system and promoting interoperability by developing infrastructure and the freight transport industry, as well as fostering the development of combined transport platforms, in collaboration with competent institutions in both countries. Such development in the Strait region will help concentrate traffic flows, improve transport organization and intermodality, and allow for the provision of services in line with modern standards. Ultimately, the Strait region needs to become more accessible and attractive, which will be a factor in favour of carrying out the project.

28. The draft workplan has five headings and an implementation timetable indicating the duration of studies, their costs and the procedures for their implementation. The five headings are as follows:

(a) Site data;

(b) Engineering and environment;

(c) Socioeconomics and accessibility and attractiveness of the Strait region;

(d) External relations; and

(e) Overall project evaluation.

29. The following appears under the heading "Site data":

- Maintain active cooperation among the relevant scientific institutions and universities in the two countries, especially in the collection of all types of data in the Strait (including seismic, geodesic and altimetric data, and prediction of sea currents)

- Study the development of geotechnical research techniques by undersea drilling through the breccia and exploration of the previously excavated undersea gallery, and
- Study directional drilling techniques and the possibility of carrying out an undersea long horizontal drilling operation at the end of the workplan.

30. With regard to the heading "Engineering and environment", the results of the 2007 update of the preliminary pilot project (PPP-07) led to the conclusion that collecting other geotechnical data by means of undersea drilling would be very difficult and burdensome and that the only way to determine the feasibility of the tunnel would be to successfully dig an exploratory gallery through the two palaeochannels in the Strait. The framework of the draft workplan therefore provides for a detailed study thereof. On the other hand, the overall evaluation focused on the operation of a single-tube tunnel, which gave rise to suggestions that a new tunnel operation study should be carried out. As a result, the main goal of the workplan activities related to engineering and the environment is to make progress in the studies examining the feasibility of the fixed link through the Strait of Gibraltar and to update the technical definition of the project in the light of available data and expertise gained or to be gained, by carrying out studies to:

- Update the costs and timelines for constructing the tunnel structures
- Assess suitability for tunnelling of the materials that will be traversed
- Follow up the development of tunnel boring machines
- Update the study of operation, capacity and services to be offered
- Define more precisely the characteristics of the exploratory gallery.

Thus, by the end of the workplan, the aim is to achieve a preliminary pilot project (with an operating system) and, potentially, an exploratory gallery project.

31. The "Socioeconomics" section describes forward-looking and preparatory work, more than follow-up and support work for a completed infrastructure project. With regard to the proposed activities, it will be necessary to ensure especially careful follow-up and implementation in order to make use of the previous traffic forecasting and regional impact studies. Work must focus in particular on project scenarios and projections, given that the economic and social crisis of recent years has substantially altered trends that seemed feasible when they were presented. The following activities are therefore envisaged:

- Maintaining the work of the socioeconomic data observatory
- Updating and exploiting the traffic forecasting study
- Developing a study to examine dynamic aspects and establish potential scenarios
- Identifying all actions likely to enhance the attractiveness of the two regions bordering the Strait of Gibraltar, and improve connectivity and transport efficiency
- Defining support measures for the project, as well as measures for improving and developing its area of influence

- Studying the potential of the fixed link for the transport of various goods other than passengers and merchandise, and
- Conducting studies concerning legal, socioeconomic and transport-related issues.

32. With regard to the "External relations" heading, the goal is to show the regional and intercontinental benefits of constructing a fixed link through the Strait of Gibraltar. Under this heading, studies and activities would be carried out in order to underline the most positive aspects of the project at the transcontinental level. Given the geostrategic nature of the project, the awareness, support and engagement of international institutions, particularly with regard to the financing of the first phases of the project, is vital. In that regard, the programme will aim to:

- Enhance dissemination of the benefits of executing the project
- Maximize the number of partners and the support for the project (in particular, regional and international organizations, scientific communities and businesses)
- Promote the inclusion of the project in the international programmes of European and Mediterranean institutions
- Identify a specific phase of the project that can be completed in the short term, suitable for certification by international institutions, and
- Identify funding channels and potential funders.

33. The work of the engineering firms under the "Overall project evaluation" heading will be a useful tool for decision-making on whether to conduct further studies, as well as for coordinating and evaluating studies in the different areas. After this workplan, an overall summary report, bringing together all the results of the technical and economic studies, will be prepared. That report will mark the end of this period and will help the Joint Committee to make decisions regarding the prospects for development of the project.

VI. Conclusions

34. Analysis of the current stage must be addressed from two main directions:

(a) The technical challenge of a fixed link through the Strait of Gibraltar;

(b) The challenge of achieving optimal interoperability of transport networks on each side of the Strait;

Those two aspects must be brought together to reach a unified definition of the project in its different dimensions.

The elements mentioned above should yield specific results that will make it easier to reach a decision on the prospects for developing a project of this magnitude.